

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER D-512  
Relating to Exemptions Under Section 27156  
of the Vehicle Code

BULLY DOG TECHNOLOGIES  
"FORD POWERSTROKE DIESEL MODULE"

Pursuant to the authority vested in the Air Resources Board by Section 27156 of the Vehicle Code; and

Pursuant to the authority vested in the undersigned by Section 39515 and Section 39516 of the Health and Safety Code and Executive Order G-45-9;

IT IS ORDERED AND RESOLVED: That the installation of the Ford Powerstroke Diesel Module manufactured and marketed by Bully Dog Technologies of 2854 West 2200 South, Aberdeen, Idaho 83210, has been found not to reduce the effectiveness of required motor vehicle pollution control devices and, therefore, is exempt from the prohibitions of Section 27156 of the California Vehicle Code for the following diesel truck applications:

<u>Vehicle Make/Model</u>	<u>Model-Year</u>	<u>Engine Type &amp; Size</u>	<u>Max. GVWR</u>
Ford F150 & F250	2000 and older	7.3L Navistar Powerstroke	11,200 lbs.

This Executive Order shall not apply to any Bully Dog Technologies' Ford Powerstroke Diesel Module advertised, offered for sale, sold with, or installed on a new motor vehicle prior to or concurrent with transfer to an ultimate purchaser.

This Executive Order is valid provided the installation instructions for the Ford Powerstroke Diesel Module will not recommend tuning the vehicle to specifications different from those of the vehicle manufacturer.

Changes made to the design or operating conditions of the device, as exempted by the Air Resources Board (ARB), that adversely affect the performance of a vehicle's pollution control system shall invalidate this Executive Order.

Marketing of this device using any identification other than that shown in this Executive Order or marketing of this device for an application other than those listed in this Executive Order shall be prohibited unless prior approval is obtained from the ARB.

This Executive Order does not constitute any opinion as to the effect that the use of this device may have on any warranty either expressed or implied by the vehicle manufacturer.

This exemption is issued based on submitted cold-start CVS-75 emissions test data conducted at Automotive Testing and Development Services, Ontario, which showed that the Ford Powerstroke Diesel Module did not adversely affect exhaust emissions of the tested vehicle. The test results are shown below.

2000 Ford F250 Truck w/ a 7.3L Navistar diesel engine

	<u>THC</u>	<u>CO</u>	<u>NOX</u>	<u>PM</u>
Baseline (g/mi)	0.055	1.404	5.972	0.280
Device (g/mi)	0.041	1.299	6.268	0.164
Change	-0.014	-0.105	+0.296	-0.116
% Change	-25.4	-7.5	+4.9	-41.4

Comparative emissions test results showed that the increase in NOx emissions over baseline levels are within the allowable limits specified in the "Procedures for Exemption of Add-on and Modified Parts." Snap idle opacity tests conducted on the modified vehicle showed smoke opacity levels are within the applicable peak smoke opacity standard. This Executive Order is also based on the On-Board Diagnostic II (OBD II) testing conducted on the same test vehicle. Test data showed that the Ford Powerstroke Diesel Module when installed on the vehicle did not affect the vehicle's ability to perform its OBD II monitoring.

However, the ARB finds that reasonable grounds exist to believe that use of the Bully Dog Technologies' Ford Powerstroke Diesel Module may adversely affect emissions of motor vehicles when operating under conditions outside the parameters of the previously prescribed test procedures. Accordingly, the ARB reserves the right to conduct additional emission tests, in the future, as such tests are developed, that will more adequately measure emissions from all cycle phases. If such test results demonstrate that the Ford Powerstroke Diesel Module adversely affects emissions during off-cycle conditions (defined as those conditions which are beyond the parameters of the cold-start CVS-75 Federal Test Procedure), this Executive Order shall be effectively rescinded as of the date the test results are validated. Further, if such test results or other evidence provides the ARB with reason to suspect that the Ford Powerstroke Diesel Module will affect durability of the emission control systems, Bully Dog Technologies shall be required to submit durability data to show that the durability of the vehicle emission control system is not, in fact, affected and/or that the add-on modified part demonstrates adequate durability.

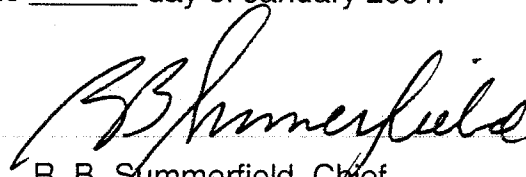
In addition to the foregoing, the ARB reserves the right in the future to review this Executive Order and the exemption provided herein to ensure that the exempted add-on or modified part continues to meet the standards and procedures of Title 13, California Code of Regulations, Section 2222, et seq.

THIS EXECUTIVE ORDER DOES NOT CONSTITUTE A CERTIFICATION, ACCREDITATION, APPROVAL, OR ANY OTHER TYPE OF ENDORSEMENT BY THE AIR RESOURCES BOARD OF ANY CLAIMS OF THE APPLICANT CONCERNING ANTI-POLLUTION BENEFITS OR ANY ALLEGED BENEFITS OF BULLY DOG TECHNOLOGIES' FORD POWERSTROKE DIESEL MODULE.

No claims of any kind, such as "Approved by the Air Resources Board" may be made with respect to the action taken herein in any advertising or other oral or written communication.

Violation of any of the above conditions shall be grounds for revocation of this order. The order may be revoked only after ten day written notice of intention to revoke the order, in which period the holder of the order may request in writing a hearing to contest the proposed revocation. If a hearing is requested, it shall be held within ten days of receipt of the request and the order may not be revoked until a determination is made after the hearing that grounds for revocation exist.

Executed at El Monte, California, this 25<sup>th</sup> day of January 2001.

  
R. B. Summerfield, Chief  
Mobile Source Operations Division

State of California  
AIR RESOURCES BOARD

EVALUATION OF BULLY DOG TECHNOLOGIES' FORD POWERSTROKE DIESEL MODULE  
FOR EXEMPTION FROM THE PROHIBITIONS IN VEHICLE CODE SECTION 27156, AND  
SECTION 2222, TITLE 13, CALIFORNIA CODE OF REGULATIONS

January 2001

by

Mobile Source Division

9528 Telstar Avenue  
El Monte, CA 91731-2990

(This report has been reviewed by the staff of the California Air Resources Board and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the Air Resources Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.)

## SUMMARY

Bully Dog Technologies (Bully Dog) of 2854 West 2200 South Aberdeen, Idaho 83210, has applied for an exemption of its Ford Powerstroke Diesel Module (Diesel Module) from the prohibitions in Vehicle Code (VC) Section 27156 and 38391, in accordance with Section 2222 of Title 13, California Code of Regulations (CCR). The Diesel Module replaces the original equipment manufacturer (OEM) Prom Chip in the Engine Control Unit (ECU) of the vehicle. The Bully Dog Diesel Module is designed for installation on 2000 and older model-year Ford F150 and F250 trucks powered by a 7.3L Navistar powerstroke diesel engine with a Gross Vehicle Weight Rating (GVWR) of 11,200 lbs. or less. Bully Dog claims that its Diesel Module improves the engine power output and also decreases fuel consumption.

Emission tests were conducted at Automotive Testing and Development Services, inc. (ATDS), an independent laboratory which also acted as Bully Dog's representative for the purpose of obtaining a VC Section 27156 for the company. Results from the tests showed that the installation of the Diesel Module does not adversely affect the pollution control systems of the vehicle. Based on results from testing conducted at ATDS, the staff recommends that the exemption be granted as requested and that Executive Order D-512 be issued to Bully Dog.

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EVALUATION OF BULLY DOG TECHNOLOGIES' FORD POWERSTROKE DIESEL MODULE  
FOR EXEMPTION FROM THE PROHIBITIONS IN VEHICLE CODE SECTION 27156, AND  
SECTION 2222 TITLE 13, CALIFORNIA CODE OF REGULATIONS

I. INTRODUCTION

Bully Dog Technologies (Bully Dog) of 2854 West 2200 South, Aberdeen, Idaho 83210, has applied for an exemption from the prohibitions in Vehicle Code (VC) Section 27156 for its Ford Powerstroke Diesel Module (Diesel Module). The Diesel Module is designed for installation on 2000 and older model-year Ford F150 and F250 Trucks powered by a 7.3L Navistar powerstroke diesel engine and certified to a Gross Vehicle Weight Rating (GVWR) of 11,200 lbs. or less. The manufacturer claims that the Diesel Module improves engine performance and decreases fuel consumption.

II. CONCLUSION

The applicant has submitted results from testing conducted at Automotive Testing and Development Services, Inc. (ATDS) which show that the installation of the Diesel Module does not adversely affect emission levels of applicable vehicles. Based on the exhaust emissions test data and the On-Board Diagnostic II (OBD-II) compatibility test, the staff concludes that the Diesel Module meets the requirements for the VC Section 27156 exemption.

III. RECOMMENDATION

Staff recommends that the exemption be granted as requested and that Executive Order D-512 be issued, permitting the advertisement, sale, and installation of the Diesel Module.

IV. DEVICE DESCRIPTION

Bully Dog's Ford Diesel Module is a Prom Chip designed to replace the OEM Prom Chip in the Engine Control Unit (ECU). Bully Dog states that the function of its Diesel Module differs from the OEM Prom Chip by an increase of five percent in fuel injection, an increase of 20 percent in total fuel delivery during high load demand, and a timing advance by a maximum

of two degrees. The throttle position sensor is adjusted to approximately 20 percent above the mid-point, and the duty cycle is increased to 4.0 amps. The installation of the Diesel Module also allows the speed-limiter to be removed. Bully Dog also supplies a "Boost Tube" with the Diesel Module to replace the rubber vacuum line connected to the turbocharger wastegate actuator. The tube has a small hole drilled on the metallic end which should be left open at all time to relieve excessive boost pressure. The tube is only applicable to 1999 to 2000 model-year vehicles equipped with a turbocharger.

#### V. DEVICE EVALUATION

The Diesel Module was tested at ATDS, an independent test laboratory which also acted as the representative of Bully Dog for the purposes of obtaining VC Section 27156 exemption for the company. One cold-start CVS-75 test was conducted in baseline configuration, followed by one cold-start CVS-75 test with the Diesel Module installed. The test vehicle was a 2000 Ford F250 Truck powered by a 7.3L Navistar powerstroke diesel engine.

The test results submitted by ATDS are shown below.

	<u>THC (g/mi)</u>	<u>CO (g/mi)</u>	<u>NOx (g/mi)</u>	<u>Particulate Mass (g/mi)</u>	<u>Smoke Opacity (%)</u>
Baseline	0.055	1.404	5.972	0.280	7.6
Device	0.041	1.299	6.268	0.164	8.1
Change	-0.014	-0.105	+0.296	-0.116	+0.5
% Change	-25.4	-7.5	+4.9	-41.4	+6.6

The increase in NOx emission is within allowable limit specified under the Procedures for Exemption of Add-on and Modified Parts (Procedures). Results of snap idle smoke opacity tests showed that the opacity levels from the test vehicle remained below the applicable peak



smoke opacity standards. The increase of 6.6 percent in peak smoke opacity with the device is within acceptable limit under the Procedures. OBD-II compatibility test conducted on the same test vehicle also showed that the Diesel Module did not adversely affect the vehicle's emissions monitoring systems. The ARB was unable to perform confirmatory testing at its own laboratory because the applicant stated that the vehicle owner insisted on having his vehicle returned immediately.

The above test results meet the requirements specified in the Procedures.